

THE EFFECT OF THE REALISTIC MATHEMATIC EDUCATION (RME) APPROACH ON SPACIOUS FIGURES TO IMPROVE STUDENTS' CONCEPTUAL UNDERSTANDING AND LEARNING ACHIEVEMENT

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ABSTRACT

The Effect of Realistic Mathematics Education (RME) Approach on Solid Geometry Material to Improve Students' Conceptual Understanding and Learning Achievement. Thesis. Mathematics Education Study Program. Faculty of Teacher Training and Education. Muhammadiyah University of North Sumatra.

The purpose of this study is to determine the Effect of Realistic Mathematics Education (RME) Approach on Solid Geometry Material to Improve Students' Conceptual Understanding and Learning Achievement. The population in this study is all grade X students of SMK TRITELCH INFORMATIKA MELDAN in the 2023/2024 academic year consisting of one class. The sample of this research is class X with a total of 25 people from various classes of ELKSPERRIMELn with the Realistic Mathematics ELducation (RMEL) approach. This research took place from August 22, 2024 – September 5, 2024. Data collection in this research uses TEST techniques. The first TEST uses pretest and the second uses posttest. The results of the pretest scores of all students are <75 (did not pass) and the results of the posttest of all students are >75 (passed). From the results of this study, it can be concluded that there is an influence of the Realistic Mathelmatics ELducation (RMEL) attachment on the understanding of the concept and learning achievement of mathematics students of grade X SMK TRITELCH INFORMATIKA MELDAN.

Keywords: Realistic Mathelmatics ELducation (RMEL) attachment, on the understanding of the concept and learning achievement of students.

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1. INTRODUCTION

Education is a fundamental need in social, national, and state life, as the progress of a nation is largely determined by the quality of its education. National Education System Law Number 20 of 2003 affirms that the goal of national education is to produce a generation that is faithful, pious, virtuous, intelligent, and creative. Mathematics is a compulsory subject at every level of education, from elementary school to university. Mathematics plays a crucial role as a foundation for other sciences and aims to equip students with logical, analytical, systematic, critical, and creative thinking skills.

However, mathematics is often considered difficult due to its abstract nature, full of symbols, and confusing formulas. As a result, mathematics learning is often perceived as meaningless, students struggle to grasp concepts, and tend to be weak in applying them to real-life situations. This situation impacts student learning outcomes, as demonstrated by international studies. The 2015 TIMSS results ranked Indonesia 45th out of 50 countries, while the 2015 PISA results showed Indonesia ranked 63rd out of 70 countries. This reflects students' poor understanding of mathematical concepts.

Observations at SMK Tritech Informatika Medan reinforce this finding, where mid-term exam results showed that only 33% of 10th-grade students achieved a score of 75 or higher, while 67% fell below the minimum completeness criteria (KKM). Furthermore, the learning process remains teacher-centered, resulting in passive students, often simply copying their peers' answers, and easily forgetting the material taught. This situation leads to students' disinterest in mathematics and a decline in conceptual understanding. Therefore, a learning model is needed that can increase student activity and engagement, both individually and in groups.

One relevant approach is Realistic Mathematics Education (RME). This approach emphasizes learning that originates from real-world contexts so that students can engage meaningfully. The teacher acts as a facilitator in the process of reconstructing mathematical ideas and concepts. RME has various advantages, including strengthening memory, increasing engagement, fostering self-confidence, fostering collaboration, and encouraging critical thinking and expressing opinions. With these characteristics, RME is believed to improve students' conceptual understanding and mathematics learning outcomes.

Based on this description, this study was conducted to further examine the influence of the Realistic Mathematics Education (RME) approach on spatial geometry material on students' conceptual understanding and learning achievement.

2. METHOD

This research uses a quantitative approach with an experimental approach. Experimental research is a method for establishing a causal relationship between two factors intentionally created by the researcher by eliminating, reducing, or eliminating other contributing factors (Arikunto, 2012).

According to Sugiyono (2019), experimental research is a research method used to determine the effect of certain treatments on other variables under controlled conditions. The method used in this research is a quasi-experimental study, which aims to determine whether or not there is an effect from something imposed on the research subjects.

This method was chosen because this study examines whether a causal relationship exists. Each experimental group is subjected to certain treatments under controllable conditions (Punaji Setyosari, 2010:36).

3. RESULTS AND DISCUSSION

After conducting the research, the author analyzed all the collected test results. Prior to conducting the research, the researcher first tested the test instrument, which consisted of validity and reliability tests. After the entire test instrument was declared valid and reliable, the researcher administered the test using a 10-question essay-style practice sheet. This test aimed to determine the conceptual understanding and mathematics learning achievement of 10th-grade students at SMK Tritech Informatika Medan.

This study used two variables: conceptual understanding and mathematics learning achievement, using the RME (Realistic Mathematics Education) model. All data obtained were then processed and analyzed. Data interpretation was carried out by describing the results based on the highest score, lowest score, mean, mode, median, and other

descriptive statistical measures. The following presents the results of the pretest and posttest data processing.

The calculation results show a calculated t-value of 16.4037, while the t-table value was 2.060 at a significance level of $\alpha = 0.05$. Because the calculated t-value $>$ t-table ($16.4037 > 2.060$), H_0 is rejected and H_a is accepted.

This means that there is a significant effect of using the RME model on conceptual understanding and mathematics learning achievement of 10th-grade students at SMK Tritech Informatika Medan.

4. CONCLUSION

Hasil dari analisis data yang telah dilakukan, dengan itu diperoleh kesimpulan:

1. Hasil nilai pretest menunjukkan bahwa rata-rata menunjukkan bahwa, rata-rata nilai (mean) sebesar 50,2, dengan std Deviation sebesar 7, 427427. Sedangkan hasil dari belajar posttest dengan menggunakan metode RME Rata-rata (mean) sebesar 85,2, dengan simpang baku sebesar 8,416254.
2. Hasil uji hipotesis yang menunjukkan bahwa nilai t hitung besar 16,4037. Artinya nilai t hitung $>$ nilai t tabel atau $16,4037 > 2.060$. Maka disimpulkan bahwa terdapat hasil dari belajar terhadap pemahaman konsep dan prestasi belajar matematika siswa kelas X SMK TRITECH INFORMATIKA MEDAN.
3. Metode RME efektif untuk diterapkan sebagai metode pembelajaran matematika pada siswa X SMK TRITECH INFORMATIKA MEDAN.

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